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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/725,564	12/03/2003	Ephraim Gutmark	003-099	4003
36844	7590	02/14/2006	EXAMINER	
CERMAK & KENEALY LLP 515 E. BRADDOCK RD ALEXANDRIA, VA 22314			COCKS, JOSIAH C	
			ART UNIT	PAPER NUMBER
			3749	
DATE MAILED: 02/14/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	10/725,564	GUTMARK ET AL.	
	Examiner	Art Unit	
	Josiah Cocks	3749	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Receipt of applicant's amendment filed 11/14/2005 is acknowledged. By this amendment applicant has amended each of independent claims 1 and 7 to include a recitation that the two different interference frequencies are affected "simultaneously."

2. In regard to the 35 USC 112 rejection made in the prior Office action, applicant argues that the use of the phrase "or both" in each of claims 1 and 7 does not render the scope of the claims indefinite. Applicant argues that the elements or steps appearing both the "or both" phrases are properly regarded as an ordered list recited as alternative limitations that should be regarded as acceptable claim construction and points to MPEP § 2173.05(h) in support of this assertion. Upon further review, the examiner agrees. Accordingly, the prior 35 USC 112 rejection is withdrawn.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 7, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,464,489 to Gutmark et al. ("Gutmark '489") (cited by applicant).

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Gutmark '489 discloses in Figures 1-10 the invention in the same field of endeavor as applicant's invention and as described in applicant's claims 1-3, 7, and 8. In particular, Gutmark shows a device and method for affecting thermoacoustic oscillations in a combustion system including a burner in which a gas flow forming in the region of the burner is excited acoustically (see Abstract). It is recognized that multiple frequency waves (i.e. at least two) are introduced into a gas flow shear layer (see col. 2, lines 32-61) and that the acoustic excitation functions to counteract, and is thus coordinated with, the formation of multiple interference frequencies (see col. 3, lines 54-59). Gutmark '489 further discloses a control system that includes one or more acoustic sources (10) producing acoustic excitations of different phases or amplitudes and a filter (20) (see at least col. 5, lines 22-63 and col. 8, lines 26-59).

In regard to added recitation that the acoustic excitations "simultaneously" affect the at least two different interference frequencies, as noted above, Gutmark '489 discloses that the acoustic excitations function to counteract the formation of the coherent structures (see col. 3, lines 54-59), which is regarded as simultaneously counteracting the formation of the multiple interference frequency waves previously described (i.e. Gutmark '489, col. 2, lines 41-58).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gutmark '489 in view of U.S. Patent Application Publication US 2001/0027638 to Paschereit et al. ("Paschereit").

Gutmark '489 includes a recitation that oscillations in the combustion system may be controlled/affected by fuel injection modulation (see col. 3, lines 26-31) but does not appear to go into further detail as to controlling the fuel injection via at least one control valve with different injection times, or quantities or affecting another interference frequency by fuel injection modulation.

Paschereit teaches a system and method for affecting thermoacoustic vibrations in the same field of endeavor as applicant's invention and Gutmark '489. In Paschereit, the thermoacoustic vibrations are controlled by means of modulating fuel injected with respect to time (see page 1, paragraph 007) and such modulation may be effected at any frequency (id. and page 2, paragraphs 0027-0029). The modulation is effected by opening and closing one or two fuel valves to control fuel quantity (see page 2, paragraph 0022). Paschereit also notes that the

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fuel injection may be correlated with thermoacoustic vibrations measured in the combustion system (see page 2, paragraph 0017).

Therefore, in regard to claims 4-6, it would have been obvious to a person of ordinary skill in the art to modify the system and method of Gutmark'489 to incorporate the fuel injection modulation of Paschereit as this fuel modulation technique is recognized to control thermoacoustic vibrations in a combustion system for vibrations of any frequency (see Paschereit, page 1, paragraphs 0006 and 0007).

Double Patenting

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claim 7 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 7 of copending Application No. 10/725,563.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the structure recited in each of these claims is substantially identical. That the control systems function to affect different interference frequencies does not render the device claims distinct. This recited functioning of the control system is merely a recitation of the intended use of the control system and does not serve to structurally distinguish claim 7 of this application from claim 7 of Application No. 10/725,563. It has been held that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. *See In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). As there is no recited structural difference between the claims they are not regarded as patentably distinct.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The examiner notes that he became aware of the double patenting issues of this application during the course of examination of Application 10/725,563 after mailing of the Office action in this application. Pursuant to MPEP 804(I)(B), the provisional double patenting rejection should be made in both applications unless such provisional double patenting rejection is the only rejection remaining in at least one of the applications. As noted above, the claims of this application are also rejected over the prior art. Accordingly, the provisional double patenting rejection is properly applied.

Response to Arguments

10. Applicant's arguments filed 11/14/2005 have been fully considered but they are not persuasive.

Applicant essentially argues that the prior art does not suggest combining acoustic and fuel modulation approaches to dealing with thermoacoustic oscillations in combustion system. Applicant argues that Gutmark considers these two approaches to be alternatives. Applicant also states the following:

“Gutmark thus teaches away from a general combination of Gutmark and Paschereit, because the person of ordinary skill in the art would not expect to improve the “good” method with the “bad” method, as Gutmark’s disclosure characterizes them.” (Response, p. 9).

To support this assertion applicant points to column 3, lines 22-31 of Gutmark. This section of Gutmark is reproduced below:

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chamber is only 0.6% of the suppressed power. As a further driving mechanism, flame and fluid flow dynamics in the combustion chamber, in particular thermoacoustic instabilities, can also be induced by changes in equivalence ratio. However, a comparison between the estimated OH change during one cycle of oscillation and the measured value showed that the driving mechanism which is initiated by the equivalence ratio (e.g. by fuel injection modulation) only plays a secondary role to the main mechanism related to flow instabilities.

This section has been carefully considered as well as the remaining disclosure of Gutmark. The examiner finds no such characterization that one method is “good” and another “bad” is present as asserted by applicant. Instead, the examiner notes that this section of Gutmark appears to suggest that the fuel injection modulation would be applied in conjunction with the correlation of acoustic excitation with thermoacoustic vibrations, albeit in a secondary role, to desirably provide another measure of control of oscillations in the system. As noted above, Paschereit is relied upon by the examiner to clearly demonstrate that the practice of fuel injection modulation is recognized in the art for the same purpose suggested in Gutmark, i.e. to provide a measure of control of oscillations in a combustion system through correlation of the fuel injection with thermoacoustic vibrations. A person of ordinary skill in the art in possession of these two references would reasonably conclude that the combination of the practice of correlating acoustic excitation with thermoacoustic vibrations with the practice of the correlation of fuel modulation with the same vibrations would desirably provide measures of control of the oscillations in the combustion system.

Applicant also briefly argues that the modulation of the equivalence ration specified in Gutmark is not the same as fuel modulation. However, the examiner notes that explanatory parenthetical noted in the section of Gutmark reproduced above which specifies that the

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modulation of the equivalence ratio is performed via fuel injection modulation clearly contradicts applicant's argument. Accordingly, applicant's argument is not persuasive.

For the reasons articulated in this Office action, applicant's claims are not regarded to patentably distinguish applicant's invention over the prior art.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Josiah Cocks whose telephone number is (571) 272-4874. The examiner can normally be reached on weekdays from 8:00 AM to 5:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ehud Gartenberg, can be reached at (571) 272-4828. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://portal.uspto.gov/external/portal/pair>. Any questions on access to the Private PAIR system should be directed to the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).

jcc
February 8, 2006


JOSIAH COCKS
PRIMARY EXAMINER
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